

TOWN OF YELLOWKNIFE

REPORT ON

LATHAM ISLAND DEVELOPMENT

1969

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Reid, Crowther & Partners Limited

ULTING ENGINEERS 10350-124TH STREET, EDMONTON, ALBERTA • TELEPHONE 482-4411, AREA CODE 403

E REFER TO FILE NO. 2556

May 8, 1969

LETTER OF TRANSMITTAL

Mr. N. W. Byrne,
Chairman Town Development Committee,
Town of Yellowknife,
Yellowknife, N.W.T.

Dear Sir:

We are pleased to present herewith our preliminary review of the servicing of Latham Island.

Our review of the various aspects of servicing this area indicates that the best method of water supply and sewage disposal for the Latham Island area is to extend the existing services to the edge of the area considered. This would result in less costly servicing on Latham Island as well as providing a very great asset to the development of the area between 41 Street and the Latham Island Bridge.

Should the demand for the above trunk services not be great enough to provide the necessary financing, a method of servicing Latham Island separately from existing systems has been described and costs estimated. This is a less desirable alternative in view of increased capital costs and increased operating and maintenance costs for sewage treatment.

We have recommended that a soil testing program be carried out on Latham Island this summer to establish the location of bedrock, as this factor is significant in estimating development costs.

Yours truly,

REID, CROWTHER & PARTNERS LIMITED

REPORT ON
LATHAM ISLAND DEVELOPMENT

We have as requested made a preliminary review of the engineering aspects of the development of Latham Island.

The current Town Zoning Plan shows the northerly half of Latham Island zoned as Open Space and the southerly half shown as a light industrial, R1 and R4 and limited development area. We have, therefore concentrated our review as requested on the southerly portion of Latham Island which is currently being considered for development. We have shown this area on Exhibit No. 1.

The southerly portion of the island consists of approximately 52 acres. Approximately 23 acres of this area have been subdivided into 93 standard lots plus eleven water lots.

Of these 104 lots, 73 lots are currently zoned for R1 and 29 lots are zoned as light industrial. Approximately 21 acres have been zoned R4 and the remainder as Open Space.

Under the current zoning a potential population of approximately 300 to 400 persons could be expected in the R1 zoned lots.

There would appear to be in the order of 10 acres of usable land in the area zoned as R4. The potential population of the area is difficult to assess as it would depend greatly on the demand for various types of R4 development. If current Yellowknife trends for this type of area are followed, a potential population in the area would be in the order of 400 to 600 persons. This would give the southerly

area of Latham Island an estimated potential population in the order of 1000 persons.

We have used this figure in estimating the costs of services.

WATERWORKS SYSTEM

We have considered the waterworks in essentially two parts, being the water supply system to a central point on Latham Island and, secondly, the water distribution system to the various lots on the Island.

Considering the latter first, the water distribution system would, of course, be a circulating system to prevent freezing. A single main system would be utilized where possible, however, a dual main system would be required to service Block 7 and Block 9. The estimated cost for the waterworks distribution system to service the existing subdivided area is \$207,000.

There are two alternatives available for the source of supply of water to Latham Island. The first is to construct a connection to the existing water distribution system and the second alternative would be to construct a new connection to the proposed submarine water supply line in Yellowknife Bay. In either case the waterworks distribution system on Latham Island would be operated as a separate circulating system. In order to do this a pump station would have to be constructed which would include a small amount of heated water storage, boilers to reheat the water, pressure and circulation pumps, standby energy source for power outages and a fire pump. In the case of a new connection to the proposed submarine line, chlorination and fluoridation equipment and an intake for fire flows and emergency operation would be required to provide service on a normal municipal level.

It is estimated that the cost to construct the water supply line to Latham Island from its existing location of 41 Street and 50 Avenue would be approximately \$210,000. A major share of this cost should be assessed to adjacent land along the route as it would be an asset to the area. If however the major portion of this cost cannot be assessed to the adjacent land, this alternative would appear unattractive. The second alternative for supply, that is a submarine connection to the proposed submarine pipeline in Yellowknife Bay is estimated to cost approximately \$70,000. A connection on the 16 inch water supply pipeline currently under construction has been provided should this alternative be selected.

SANITARY SEWERAGE

This aspect of the Municipal services can also be considered in two parts being the sanitary sewage collection system and secondly the sewage disposal system.

Sanitary sewage collection for the existing surveyed portions would be achieved by the use of gravity sewers flowing towards a point in the vicinity of lot 14 block 5. The estimated cost of the sanitary sewage collection system for the surveyed area is \$165,000.

Disposal of the sanitary sewage is the major problem with this area. There are two basic methods available for disposal, the first being pumping the sewage into the existing system and hence utilize the existing main lift station and oxidation ponds. This alternative as with the water supply requires that the area between 41

Street and south end of Latham Island be developed as it is estimated that the cost to construct a series of gravity sewers and small lift stations between the existing sewage lift station on 41 Street and the south end of Latham Island will cost approximately \$218,000.

The second alternative available would be to provide a sewage treatment plant on Latham Island and dispose of treated sewage in the Yellowknife Bay by means of an outfall line. This second alternative is estimated to cost in the order of \$80,000.

ESTIMATED COSTS

Estimated costs are based on recent tendering experience in Yellowknife. The cost estimates are strongly influenced by the rock excavation included for the underground services. As very little soils information on Latham Island is available, a soil testing program should be carried out on the utility alignments to confirm the location of bedrock in the area. It would appear desirable to carry out this testing program this summer while the surface watermain is in use and water jetting of test holes can be utilized.

The estimated costs have been summarized in two ways. The first summary shown in Table No. 1 assumes that the water and sewer trunk mains are to be constructed to the north end of the mainland near the existing bridge. The total estimated development costs for this alternative are \$714,000.

The second estimated cost summary shown in Table No. 2 assumes that

connection to the existing water and sewerage systems is not possible at this time.

That is new submarine water supply is utilized and that sewage treatment and disposal from Latham Island is required. Total estimated development cost for this alternative is \$819,000.

Based on a total estimated assessable frontage of 5155 front feet for the existing surveyed portion and an approximate 2200 front feet for the proposed R4 area, the frontage rates for the two alternatives are \$97.00 per front foot if connections to existing water and sewer systems can be made, and \$111. per front foot if water supply and sewage disposal are provided separately from existing system.

The above figures are based on the provision of waterworks, sanitary sewers and gravel roadways to a standard similar to the current School Draw Land Assembly Project. The cost estimates also assume that the roadway construction cost would qualify for the Territorial Government 50% road grant.

It should be noted that the estimated cost of constructing water and sewer trunk mains from 41 Street to the vicinity of the bridge to Latham Island is similar to the cost of construction on Latham Island. That is the frontage rate for the construction of these utilities based on the estimated cost \$418,000. and an estimated frontage of 5725 front feet is approximately \$73.00 per front foot. It is therefore desirable to construct these utilities rather than provide separate water and sewer systems on Latham Island.

TABLE NO. 1LATHAM ISLANDESTIMATED IMPROVEMENT COSTSWith Connection to Existing Water & Sewer SystemsA. IMPROVEMENTS SURVEYED AREA

1.	Water Distribution	\$207,000.	
2.	Sanitary Sewerage	165,000.	
3.	50% of Gravel Roadways	<u>40,000.</u>	
	Sub-Total		\$412,000.

B. IMPROVEMENTS TO PROPOSED R4 AREA

4.	Water Distribution	72,000.	
5.	Sanitary Sewers	65,000.	
6.	Lift Station	25,000.	
7.	50% of Proposed Roadways	<u>20,000.</u>	
	Sub-Total		182,000.

C. CAPITAL COSTS

8.	Water Pumpouse	70,000.	
9.	Lift Station and Force Main to Main Land	<u>50,000</u>	
	Sub-Total		<u>120,000.</u>

TOTAL ESTIMATED DEVELOPMENT COST	<u><u>\$714,000.</u></u>
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TABLE NO. 2LATHAM ISLANDESTIMATED IMPROVEMENT COSTSWith Separate Sewer and Water SystemsA. IMPROVEMENTS TO SURVEYED AREA

1.	Water Distribution	\$207,000.	
2.	Sanitary Sewerage	165,000.	
3.	50% of Gravel Roadways	<u>40,000.</u>	
	Sub-Total		\$412,000.

B. IMPROVEMENTS TO PROPOSED R4 AREA

4.	Water Distribution	72,000.	
5.	Sanitary Sewerage	65,000.	
6.	Lift Station	25,000.	
7.	50% of Gravel Roadways	<u>20,000.</u>	
	Sub-total		182,000.

C. CAPITAL COSTS

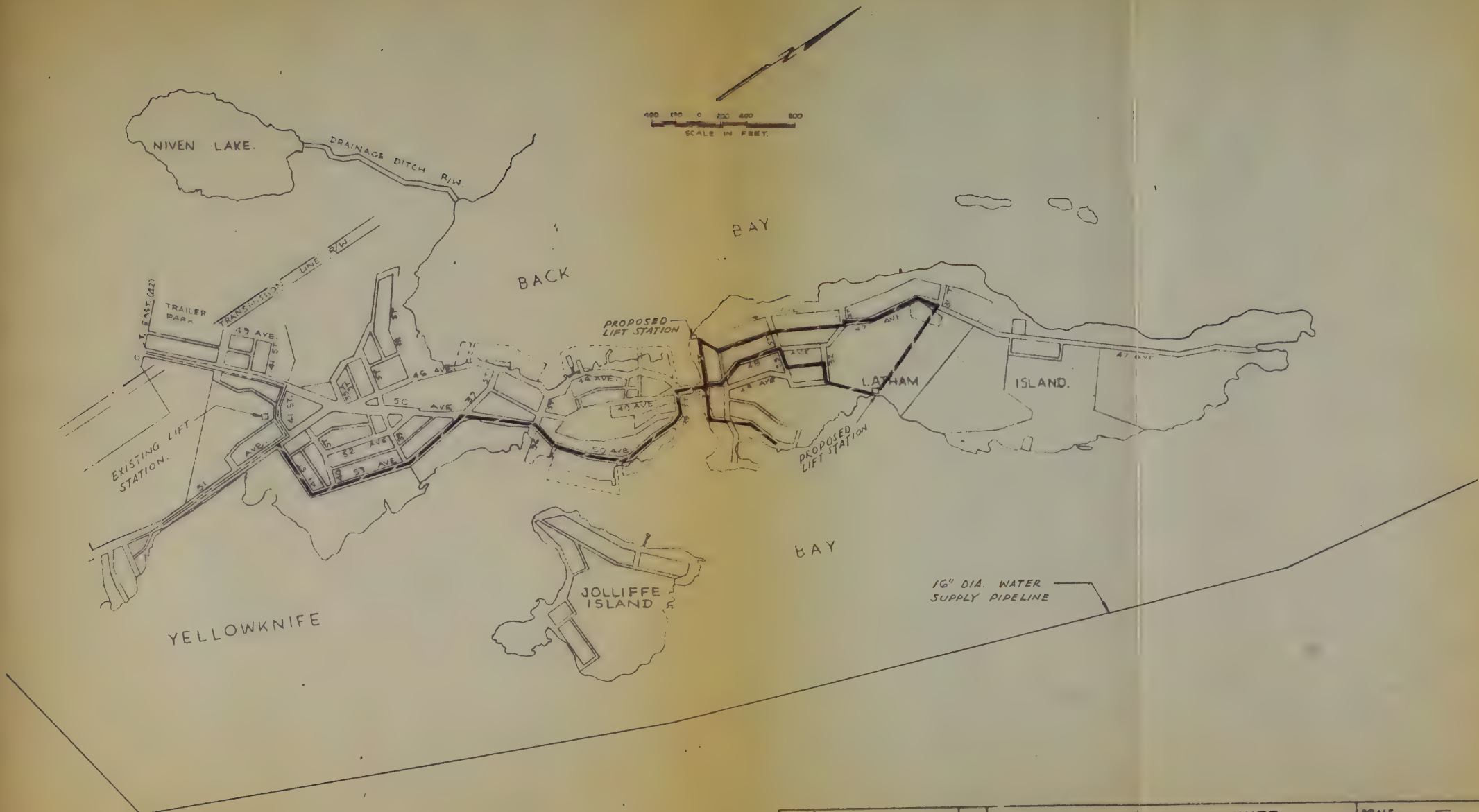
8.	Water Pumphouse	75,000.	
9.	Water Supply Line	70,000.	
10.	Sewage Treatment Plant	<u>80,000.</u>	
	Sub-Total		<u>225,000.</u>

TOTAL ESTIMATED DEVELOPMENT COST

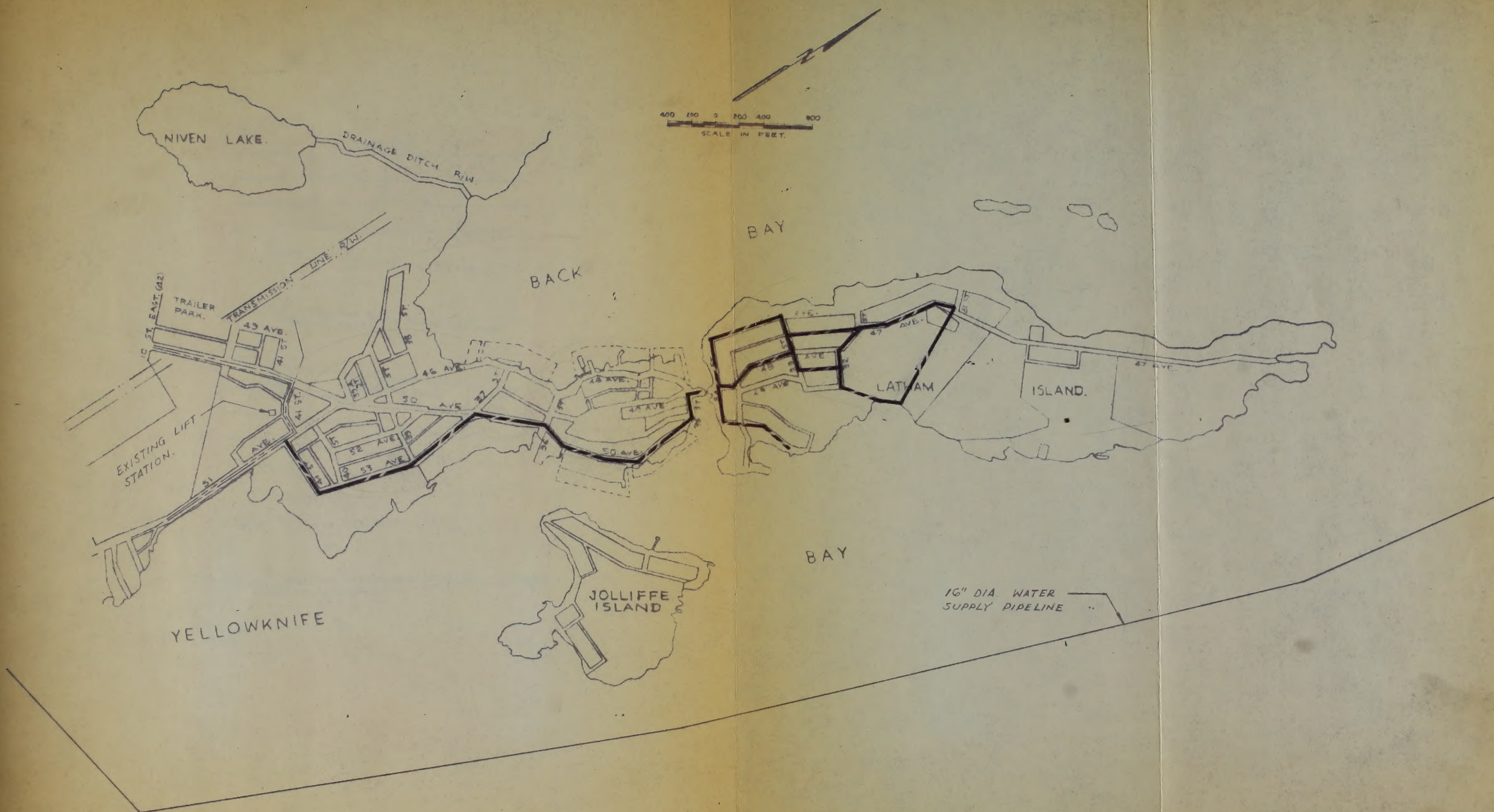
\$819,000.



			TOWN OF YELLOWKNIFE		SCALE
			LATHAM ISLAND DEVELOPMENT		DATE MAY 5, 1969
			REID, CROWTHER & PARTNERS LIMITED		DES DWN D.C.Z.
			CONSULTING ENGINEERS		CKD APP
					DWG NO.
					2556-01
DATE	REVISIONS	APP	VANCOUVER CALGARY EDMONTON REGINA WINNIPEG TORONTO		



			TOWN OF YELLOWKNIFE LATHAM ISLAND DEVELOPMENT TENTATIVE SEWER				SCALE
			REID, CROWTHER & PARTNERS LIMITED CONSULTING ENGINEERS				DATE MAY 7, 1969
			VANCOUVER CALGARY EDMONTON REGINA WINNIPEG TORONTO				DES DWN A.Y.
							CKD APP
							DWG NO.
							2556-02
DATE	REVISIONS	APP					



			TOWN OF YELLOWKNIFE LATHAM ISLAND DEVELOPMENT TENTATIVE WATER		SCALE	—
					DATE	MAY 7, 1969
					DES	DWN A.Y.
					CKD	APP
			REID, CROWTHER & PARTNERS LIMITED CONSULTING ENGINEERS		DWG NO.	
						2556 - 03
DATE	REVISIONS	APP	VANCOUVER CALGARY EDMONTON REGINA WINNIPEG TORONTO			

Date Due

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DATE LOANED	BORROWER'S NAME	DATE DUE

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